RCRA PART B PERMIT

FOR THE

IDAHO NATIONAL

ENGINEERING AND ENVIRONMENTAL LABORATORY

Volume 18 – Idaho Nuclear Technology and Engineering Center

ATTACHMENT 2

Debris Treatment Processes
Holdup and Collection Tanks
CPP-659/-1659 Storage
CPP-666 FDP Cell Container Storage Area
Radioactive Mixed Waste Staging Facility (CPP-1617)
Hazardous Chemical and Radioactive Waste Storage Facility (CPP-1619)

Section C

Waste Characteristics

Modified Date: November 18, 2003

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C. WASTE CHARACTERISTICS

This section has been prepared for the following waste treatment, miscellaneous subpart X, and storage units at the Idaho National Engineering and Environmental Laboratory (INEEL): (1) debris treatment processes, (2) holdup and collection tanks, (3) CPP-659/-1659 storage, (4) Fluorinel Dissolution Process (FDP) Cell container storage, (5) Radioactive Mixed Waste Staging Facility (RMWSF) container storage, and (6) Hazardous Chemical and Radioactive Waste Storage Facility (HCRWSF) container storage, excluding the tank truck unloading station. All these units are located at the Idaho Nuclear Technology and Engineering Center (INTEC) at the INEEL. The first three units are located at the New Waste Calcining Facility (NWCF), Building CPP-659/1659. The fourth is located within the Fluorinel Dissolution Process and Fuel Storage (FAST) facility, Building CPP-666. The remaining two units are associated with Buildings CPP-1617 and CPP-1619, respectively. Hereinafter, the debris treatment processes, holdup and collection tanks, CPP-659/-1659 storage, and FDP Cell container storage shall collectively be referred to as the debris treatment units (DTUs). The purpose of this section is to describe the process and rationale utilized by the management and operations (M&O) contractor to determine the physical and chemical characteristics of the wastes managed at these units. This section describes hazardous wastes and only the hazardous components of mixed wastes regulated by the Resource Conservation and Recovery Act (RCRA), Idaho Administrative Procedures Act (IDAPA), and the Code of Federal Regulations (CFR).

C-1. Chemical and Physical Analysis [IDAPA 58.01.05.012 and58.01.05.008; 40 CFR 270.14(b)(2) and 264.13(a)]

The INTEC units described in this permit are used to manage a variety of wastes generated from INEEL activities. These units may also accept waste from off-Site generators for storage or treatment, provided the waste has been verified in accordance with the waste analysis plan (WAP) requirements of IDAPA 58.01.05.008 [40 CFR 264.13(c)]. The waste types that may be stored or treated in these units include the following:

- Hazardous waste defined and regulated as hazardous under IDAPA 58.01.05.005 (40 CFR 261, Subparts C and D).

- Mixed waste defined and regulated as hazardous under IDAPA 58.01.05.005 (40 CFR 261, Subparts C and D) and radioactive as defined and regulated under the Atomic Energy Act (AEA).

- Low-level radioactive waste defined by U.S. Department of Energy (DOE) Order 435.1 and controlled under the AEA.

- Industrial wastes that by regulatory interpretation are neither hazardous nor radioactive material, but which the DOE has determined require recycling or special handling before disposal. Included are surplus products requiring special storage pending final disposition.

Wastes to be managed are mixed waste debris[1] and other hazardous and mixed wastes. High-efficiency particulate air (HEPA) filters[2] are one specific type of debris designated in this permit. "Other debris" for purposes of this permit is debris that is not specifically HEPA filters.

The HEPA filters are generated from off-gas systems from various INEEL operations, including the NWCF, the Fluorinel Dissolution Process, the Special Power Excursion Reactor Test at the Power Burst Facility, and Argonne National Laboratory-West (ANL-W). In the future, debris from other INTEC and INEEL processes may be stored and treated.

Wastes undergo RCRA characterization in accordance with IDAPA 58.01.05.006 and 40 CFR 262.11. The characterization is based on process knowledge and/or analytical data. Characterization results are documented through interaction with Waste Generator Services (WGS) and are logged into the INEEL Waste Tracking System (IWTS) or equivalent system. Upon completion of this characterization, the results are compared to the approved Environmental Protection Agency (EPA) Hazardous Waste Numbers (HWNs) on the RCRA Part A for each unit.

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[1] Debris means solid material exceeding a 60 mm particle size that is intended for disposal and that is: A manufactured object; or plant or animal matter; or natural geologic material. However, the following materials are not debris: any material for which a specific treatment standard is provided in Subpart D, Part 268, namely lead acid batteries, cadmium batteries, and radioactive lead solids; process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emission residues; and intact containers of hazardous waste that are not ruptured and that retain at least 75% of their original volume. A mixture of debris that has not been treated to the standards provided by 268.45 and other material is subject to regulation as debris if the mixture is comprised primarily of debris, by volume, based on visual inspection.

[2] A typical HEPA filter is composed of a corrugated filter medium of a mixture of fire-resistant glass fibers and special acid-resistant material strengthened with from 3% to 5% of an organic "latex" binding agent. The corrugated filter medium is folded back and forth and sealed on the edges to the metal housing with high-temperature-resistant silicone. The filter medium is 18 to 22 millimeters thick. The typical filter housing is made of 14-gauge 300 Series stainless steel. Most filters have a plastic mesh on the top and a stainless-steel screen on the bottom, to ensure the filter medium remains intact.

EPA HWNs are applied through acceptable knowledge, which involves both process knowledge and/or chemical and physical testing of the waste. Listed F, P, and U hazardous waste numbers for the INTEC liquid waste system have been documented in *A Regulatory Analysis and Reassessment of U.S. Environmental Agency Listed Hazardous Waste Numbers for the Applicability to the INTEC Liquid Waste System*, INEEL/EXT-98-01213, Rev 1, February 1999. The listed EPA hazardous waste numbers and the associated waste constituents are applicable as a result of the contained in rule or per the derived from rule. Characteristic hazardous waste numbers may be applied to the waste by testing the waste according to the methods set forth in Subpart C of Title 40 CFR Part 261, or according to an equivalent method approved by the Director of the Idaho Department of Environmental Quality, or by applying process knowledge of the hazard characteristic of the waste in light of the materials or the processes used.

Leachate liquids to be managed as generated from debris treatment are contaminated with characteristic and listed hazardous wastes. Listed hazardous waste numbers for the leachate would be a result of the derived from rule from treatment of HEPA filters or other debris. Likewise, characteristic EPA hazardous waste numbers would be those associated with the HEPA filters or other debris.

The RCRA Part A's for this permit summarize the EPA HWNs that have been managed in the past, may be managed in the future, and for which the permit is sought. *The Idaho National Engineering and Environmental Laboratory Site Treatment Plan* (current edition) provides information relating to specific waste streams (HEPA filters and other debris) to be treated at the INEEL. Waste streams within the *Idaho National Engineering and Environmental Laboratory Site Treatment Plan* that will be treated are subject to and limited by the waste codes listed in the RCRA Part A.

The RCRA Part A Permit for the INTEC Liquid Waste Management System (ILWMS) and the DTUs list 28 EPA HWNs. Of these 28 HWNs, 5 are listed HWNs and 23 are characteristic HWNs. Of the five listed HWNs, four are listed (F001, F002, F005, and U134) HWNs, as determined by *A Regulatory Analysis and Reassessment of the EPA listed Hazardous Waste Numbers for Applicability to the INTEC Liquid Waste System,* INEEL/EXT-98-01213, Rev. 1, February 1999, and will be carried through to the final treatment form, unless delisted. The other, F003, is listed solely due to ignitability; if F003 waste is discharged to the ILWMS, the waste will be rendered no longer ignitable and will not retain the F003 HWN.

The RMWSF and the HCRWSF have different EPA HWNs than those assigned on the Part A for the DTUs and ILWMS. RMWSF and the HCRWSF have F, K, P, and U listed HWNs and characteristic HWNs. All waste is characterized prior to acceptance into either the RMWSF or the HCRWSF. These units, with few exceptions, manage Land Disposal Restrictions (LDR) wastes that exhibit the characteristics of corrosivity and toxicity, and contain one or more listed constituents. The constituents will continue to be subject to LDR treatment standards associated with the original listed HWNs. Characteristic HWNs are variable and will be evaluated upon generation of the final waste form.

C-1a. Containerized Waste [IDAPA58.01.05.012; 40 CFR 270.15(b)(1)]

Wastes can be stored in containers in CPP-1659 and CPP-659 (Rooms 205, 206, 207, 214, 215, 216, 218, 306, 308, 309, 323, 326, 415, 416, 417, 418, 419, 421 and 422) and the FDP cell. These rooms/cells have secondary containment systems for container storage. Containerized wastes may also be stored at the RMWSF and the HCRWSF. In addition, large batteries and transformers, which are not containerized, may be received and stored at the RMWSF and HCRWSF.

FDP Container Storage

The FDP cell is being operated as a RCRA container storage unit at the -13' 0" level. The unit will not be used to store wastes containing free liquids. The wastes will be evaluated by the generating facility to ensure that they contain no free liquids. This evaluation may be based on use of the "Paint Filter Liquids Test" (SW-846, Method 9095), visual inspection, or process knowledge about the waste.

Acceptable knowledge, i.e., process knowledge and/or physical-chemical testing, per the waste acceptance criteria (WAC), will be used to characterize mixed waste debris to be stored in the FDP cell.

CPP-659/-1659 Storage

The primary waste type to be stored in containers in CPP-659/-1659 is spent HEPA filters generated at the INTEC and other INEEL operations. In addition, hazardous and/or mixed waste and debris generated at the INEEL may be stored in containers in CPP-659/-1659. See Section D-1 for a summary of the rooms in which container storage will occur. Wastes with free liquids will not be accepted for storage.

RMWSF/HCRWSF Container Storage

The RMWSF and HCRWSF are currently storing wastes generated from a variety of INEEL activities pending treatment or disposal, either on-Site or off-Site. Wastes containing free liquids may be stored in these areas. Adequate secondary containment is provided for all liquid-containing wastes. Acceptable knowledge, i.e., process knowledge and/or physical-chemical testing, per the waste acceptance criteria (WAC), will be used to characterize wastes stored in these areas.

C-1b. Waste in Tank Systems [IDAPA58.01.05.008; 40 CFR 264.191(b)(2) and 264.192(a)(2)]

HEPA Filter Leaching System (HFLS)

Wastes are treated in the HFLS in two tanks (VES-NCD-141 and VES-NCD-142) operated in series. These tanks are located in the filter handling cell, room 309, on the second level of the NWCF. As described in Section D of this permit, nitric acid solutions and water rinsing will be used to leach hazardous constituents from the HEPA filters in the first tank (VES-NCD-141). Then the treated HEPA filters will be placed in the second tank (VES-NCD-142) for air drying. As demonstrated in Section D, the tanks are constructed of materials that are compatible with the waste constituents and the nitric acid leaching solutions to be used in the tanks. The leachate from the HFLS treatment process drains to the holdup tank (VES-NCD-123) or collection tank (VES-NCD-129) located on the third level of CPP-659.

The primary waste type to be treated in the HFLS is mixed waste HEPA filters from INEEL generators. Radioactive, nonhazardous items may also be handled in the HFLS.

Sinks[3]

Two sinks will be used for hands-on treatment of debris waste. The small sink (SH-NCD-934) will be used for treatment of small items [greater than 60 mm (2.36 inches)], such as hand tools, small valves, small piping sections, or other articles lending to this type of treatment. The large sink (SH-NCD-933) will be used for treatment of pipe sections or other long items [less than 3.6 meters (12 feet) in length]. The sinks are located in the low-level decon room (room 415) in CPP-659. (See Section D-2 for details on operations.) The debris treatment solutions are primarily water-based. The makeup chemicals added to the water will be, for example, nitric acid, alkaline rust removers, selected organic acids, mild oxidizing solutions, and surfactants, which are, likewise, compatible with debris waste chemicals.

Provision for the heating of cleaning solutions in the sinks has been provided. The sinks' construction materials will be compatible with the treatment solutions and the debris chemicals, whether or not the solutions are heated.

Ultrasonic Cleaner[3]

The cleaning ability of the ultrasonic cleaner is based on the use of high-frequency mechanical vibrations in a liquid to produce a strong cleaning action at the solid-liquid interface. (See Section D-2a for details of the ultrasonic cleaning process.) Chemical solutions used in the ultrasonic cleaner are expected to be primarily water based solutions of nitric acid, alkaline rust removers, selected organic acids, mild oxidizing solutions, and surfactants. These solutions have been determined to be compatible with the construction materials, components of the ultrasonic cleaner, and debris to be treated in the ultrasonic cleaner.

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[3] For all chemical extraction processes (sinks, ultrasonic cleaner, decon cubicles, and container treatment) completion of chemical extraction is based on verification that the debris meets clean surface debris standards. The contaminants must be soluble to at least 5% by weight in water solution or 5% by weight in emulsion. The debris surfaces must be in contact with the water solution for at least 15 minutes and other conditions as specified by "performance and/or design and operating standard" and "contaminant restrictions," as described in 40 CFR 268.45, Table 1. - Alternative Treatment Standards for Hazardous Debris.

Holdup and Collection Tanks

Solutions from debris treatment are managed in the holdup and collection tanks. Chemicals used in the debris treatment processes are substantially composed of water with the addition of, for example, nitric acid, alkaline rust removers, selected organic acids, mild oxidizing solutions, and surfactants. The holdup and collection tanks have been designed to be compatible with these types of chemicals. The chemical solutions used in the debris treatment processes are characterized in accordance with this waste analysis plan (WAP) before being released to the Process Equipment Waste Evaporator (PEWE), the NWCF processes, and/or Tank Farm (until cease use, per the Noncompliance Consent Order or other options determined by the Idaho High Level Waste and Facility Disposition Environmental Impact Statement) to meet the appropriate WAC.

C-lc. Waste In Piles [IDAPA58.01.05.008; 40 CFR 264.250(c)(1) and (4)]

While awaiting treatment, spent HEPA filters will be stored in piles in building CPP-659 (Rooms 216, 218, 306, 308, 309, 323, 326, and 416). HEPA filters stored in these areas do not contain free liquids. Section D-1b(1) of this permit describes the process by which HEPA filters are generated, and explains the basis for determining that the HEPA filters do not contain free liquids. The HEPA filters are contained within an enclosed structure; and thus, are not subject to surface water run-on nor are they subject to winds or other means of wetting.

The construction and materials used in HEPA filters, as well as the contaminants associated with the HEPA filters, will not generate leachate through decomposition or other reactions. As configured within the building and with the prohibition of free liquids, the HEPA filters have no viable mechanism or pathway by which to generate leachates.

Based on the above standards and conditions, the INTEC meets the regulatory requirements under 40 CFR 264.250, and Subpart F, of 40 CFR 264.

C-1g. Waste in Miscellaneous Units [IDAPA 58.01.05.012; 40 CFR 270.23(d)]

Decon Cubicles[4]

Chemical extraction treatments will be performed on mixed waste debris in the decon cubicles. Treatment chemicals, primarily composed of water, will be e.g., nitric acid, alkaline rust removers, selected organic acids, mild oxidizing solutions, and surfactants placed into water solutions. Debris may be treated in soak tanks which have been moved into decon cubicles expressly for that purpose. Larger debris items, e.g., large motors, blowers, valves, pipe sections, small to intermediate size items, and any other debris lending to this type of treatment, will be handled in the decon cubicles.

Decon Cell[4]

Within the decon cell, chemical extraction (e.g., treatment with water-based chemicals) or physical extraction (e.g., steam, high-pressure hot water, CO_2 blasting) treatments will be performed on mixed waste debris. The decon cell provides isolated areas for remote treatment of items with high potential for contamination spread within the Decon Area. The cell can also be used for treatment of debris in portable soak tanks [see Sections D-1a(1), D-1a(2), and D-1a(3)]. The roof hatches of the cell can be removed to facilitate lowering larger items or cleaning equipment, such as a soak tank, into the cell; smaller items can be brought in by hand through the personnel access doors. Initial rinsing of very highly contaminated items is necessary for As Low As Reasonably Achievable (ALARA) and contamination control purposes before they can be transferred from the decon cell to other areas for further debris treatment work.

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[4] For all chemical extraction processes (sinks, ultrasonic cleaner, decon cubicles, and container treatment) completion of chemical extraction is based on verification that the debris meets clean surface debris standards. The contaminants must be soluble to at least 5% by weight in water solution or 5% by weight in emulsion. The debris surfaces must be in contact with the water solution for at least 15 minutes and other conditions as specified by "performance and/or design and operating standard" and "contaminant restrictions," as described in 40 CFR 268.45, Table 1. - Alternative Treatment Standards for Hazardous Debris.

Steam Spray Booth

The steam spray booth will be a multipurpose, multimedia unit with steam spray capabilities, high-pressure hot water capability, and spalling/scarification capabilities. Chemical solutions used in the steam spray booth are expected to be primarily water-based solutions of nitric acid, alkaline rust removers, selected organic acids, mild oxidizing solutions, and surfactants. These solutions have been determined to be compatible with the construction materials, components of the steam spray booth, and debris to be treated in the steam spray booth.

A liquid abrasive spray glove box attached to the booth will be used to treat mixed waste debris with high-pressure water, steam, or with solid carbon dioxide. The liquid abrasive techniques are applied by bombarding the surface of the debris with high-pressure water carrying a solid medium abrasive (e.g., aluminum oxide, plastic beads, glass beads, etc.). When using a solid medium abrasive a cushion of water prevents the contaminated debris surface from becoming impregnated with the abrasive. The abrasive materials are compatible with the debris, spray booth construction materials, and chemicals associated with the debris.

In addition to steam spray, chemical extraction, the steam spray booth also has the capability to treat debris surfaces with solid carbon dioxide (CO_2), i.e., dry ice. The dry ice particles impact the surface of the debris under pressure; and thus, remove hazardous components from the surface. The carbon dioxide will then sublime (going from a solid to CO_2 gas) and be vented to the exhaust system of the NWCF. The carbon dioxide adds no new chemicals to the hazardous component system and is essentially chemically benign in this process. No chemical incompatibility problems associated either with the steam spray booth construction materials or the debris to be treated are expected. The booth is located in the equipment decon room, room 418, of CPP-659. (See Section D-8 for details on operations.)

Another technique to be employed in the steam spray booth is spalling/scarification (See Section D-2 for details on operations). No added chemicals will be applied to this process. Treatment residuals will be characterized in accordance with Section C-2 of this permit to determine the final disposal option and facility to perform the treatment.

Container Treatment[5]

Three soak tanks (VES-NCD-138, TK-NC-136, TK-NC-137) will be used for the soaking of small to intermediate-size items, such as valves or blower components, in treatment solutions for extended periods of time. This process is considered to be container treatment. The tanks are portable, and will be used in the decon cell (room 308), the decon cubicles (rooms 421 and 422), and the Steam Spray Booth (located in room 418).

The primary purpose of the soaking will be to chemically extract hazardous materials from the debris, using the chemical extraction methods in 40 CFR 268.45. The tanks are constructed of Series 300 stainless steel. Chemicals used in the soaking process are compatible with the Series 300 stainless steel. The debris treatment solutions are primarily water-based. The makeup chemicals added to the water will be, for example, nitric acid, alkaline rust removers, selected organic acids, mild oxidizing solutions, and surfactants, which are, likewise, compatible with debris waste chemicals.

C-2. Waste Analysis Plan [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(3) and 264.13(b) and (c)]

The regulations under the RCRA, as implemented through IDAPA 58.01.05.008 (40 CFR 264.13), require a WAP for regulated waste management units. This WAP identifies what waste characterization information is needed, the nature and extent of information needed, the method(s) by which the information is gathered, and the quality assurance/quality control (QA/QC) goals.

The process outlined in this WAP is implemented for characterization of all hazardous wastes or potentially hazardous wastes managed at the INTEC units described herein. Wastes generated that are subject to this plan include wastes generated from INEEL operations, treatment residues generated from INEEL RCRA-regulated waste management activities, and off-Site wastes that have been verified in accordance with the WAP requirements of IDAPA 58.01.05.008 [40 CFR 264.13(c)]. As such, this WAP is intended for inclusion in the day-to-day waste management operations.

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[5] For all chemical extraction processes (sinks, ultrasonic cleaner, decon cubicles, and container treatment) completion of chemical extraction is based on verification that the debris meets clean surface debris standards. The contaminants must be soluble to at least 5% by weight in water solution or 5% by weight in emulsion. The debris surfaces must be in contact with the water solution for at least 15 minutes and other conditions as specified by "performance and/or design and operating standard" and "contaminant restrictions," as described in 40 CFR 268.45, Table 1. - Alternative Treatment Standards for Hazardous Debris.

This WAP is established to ensure that all data used in waste characterization be scientifically valid, defensible, and of known precision and accuracy. This objective relies on the identification of appropriate parameters and rationale, analytical methods, sampling methodologies, and quality control.

The objectives of the WAP are as follows:

- Ensure that sufficient information is available to provide safe handling, storage, and treatment of waste materials

- Define the parameters for characterization and the rationale for selection

- Establish consistent sampling, sample management, analytical methods, parameter selection, and controls for waste received and generated

- Provide a description of the waste stream characterization and approval process from the point of waste generation through the final disposition of the waste

- Establish unit-specific waste acceptance criteria (where necessary) for treatment units to ensure that sufficient information is available to determine whether the wastes considered for storage at the respective units meet the requirements established in this permit

- Provide additional requirements for the characterization and acceptance of ignitable and reactive wastes

- Define LDR requirements applicable to wastes managed in the treatment, miscellaneous, and storage units

- Verify that EPA HWNs for wastes stored or treated are acceptable per the EPA hazardous waste numbers on the Part A.

This WAP will be revised whenever test methods are changed or whenever regulations change that affect the WAP.

C-2a. Parameters and Rationale [IDAPA 58.01.05.008; 40 CFR 264.13(b)(1)]

Tables C-1 and C-2 outline the parameters for analysis and corresponding rationale for selection. The parameters and rationale in these tables are selected to satisfy the requirements of RCRA and to ensure safe, compliant treatment and storage. Not all of the parameters identified in Tables C-1 and C-2 will be selected for each waste stream. Only the specific parameters applicable to each waste stream proposed for storage or treatment are evaluated. Before treatment, storage, or disposal, a given waste stream may undergo additional RCRA characterization based on knowledge of the waste stream, RCRA characterization requirements, and/or the waste acceptance characterization requirements for treatment or disposal.

Parameter Selection and Rationale for Debris Treatment

To determine whether debris requires treatment or if treated debris meets the clean debris surface standards outlined in 40 CFR 268.45, the decision tree contained in Appendix C-1 will be used. Upon verification that the debris meets the clean debris surface standard[6], treated debris intended for disposal in a non-RCRA unit will undergo parameter selection for toxicity characteristic leaching procedure (TCLP) metals and/or organics based on the EPA hazardous waste numbers applicable to the waste. Facility personnel may use process knowledge in lieu of testing. Table C-1 lists test methods, parameter selection, and rationale for performing hazardous waste determinations.

Treated debris that meets the clean debris surface standard is managed as a nonhazardous waste, unless the debris itself exhibits a characteristic of hazardous waste. Any debris that exhibits a characteristic of hazardous waste will undergo parameter selection for additional LDR assessments, if applicable. Table C-2 lists test methods, parameters, and rationale for LDR assessments, if applicable.

[6] "Clean debris surface" means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area.

Table C-1. Test Methods for Waste Analysis Parameters and Rationale.

PARAMETER	SW-846 TEST METHODS	RATIONALE
Toxicity characteristic	1311 Toxicity Characteristic Leaching Procedure (TCLP) or Process Knowledge	Determine the waste and LDR status.
TC Metals: arsenic barium cadmium chromium lead mercury selenium silver	As determined most appropriate by facility personnel and the laboratory, per SW-846, Chapter Two, "Choosing the Correct Procedure" or Process Knowledge	Determine if the waste is characteristically hazardous for toxicity. Determine expected underlying hazardous constituents (UHCs).
Corrosivity/pH Corrosivity toward steel	9040B 1110 or Process Knowledge	Determine if the waste is characteristically corrosive.
Volatile organic and semivolatile organic compounds	As determined most appropriate by the laboratory, per SW-846, Chapter Two, "Choosing the Correct Procedure" or Process Knowledge	Determine whether the waste is characteristically toxic for organic compounds or whether listed waste constituents can be detected. Identify expected UHCs.
Paint filter test	9095A or Process Knowledge	Determine if the waste has a free liquid.
Flash Point	1010 1020A or Process Knowledge	Determine if waste is characteristically ignitable, per RCRA.
Reactivity	As determined by Process Knowledge and/or SW-846, Chapter Seven methods	Determine if waste is characteristically reactive according to RCRA and to prevent mixing of incompatible waste in tank and treatment systems.

Table C-2. Test Methods, Parameters, and Rationale for LDR Status.

PARAMETER	SW-846 TEST METHODS	RATIONALE
Toxicity characteristic	1311 Toxicity Characteristic Leaching Procedure (TCLP) or Process Knowledge	Determine waste and LDR status.
TC metals	As determined most appropriate by facility personnel and the laboratory, per SW-846, Chapter Two, "Choosing the Correct Procedure" Or Process Knowledge	Determine LDR status. Evaluate mercury subcategory and UHCs.
Total organic carbon (TOC)	As determined most appropriate by the facility personnel and the laboratory per SW-846, Chapter Two, "Choosing the Correct Procedure" Or Process Knowledge	Determine wastewater/nonwaste water and ignitable subcategories.
Total suspended solids (TSS)	Method 160.2 (Nonfilterable Residue) from Water and Wastewater methods (EPA-600/4-79-020) Or Process Knowledge	Determine wastewater/nonwaste water and ignitable subcategories.
Halogenated volatile organics (HOCs) semivolatile organics	As determined most appropriate by the facility personnel and the laboratory per SW-846, Chapter Two, "Choosing the Correct Procedure" Or Process Knowledge	Determine listed and LDR status, including UHCs
Paint Filter Test	9095A or Process Knowledge	Determine liquid/solid status.
Cyanides, Sulfides, Water Reactive, Chemical Stability, Shock Sensitive	As determined by Process Knowledge and/or SW-846, Chapter Seven methods	Determine reactive subcategory.
Flash point	1010 1020A or Process Knowledge	Determine if waste is characteristically ignitable per RCRA.
Corrosivity/pH Corrosivity Toward Steel	9040B 1110 or Process Knowledge	Determine acidity, basicity, or neutral.

The specific parameters selected for characterization are determined on a case-by-case basis. For example, facility personnel select the appropriate parameters, based on knowledge of the waste source, characterization requirements to identify RCRA-regulated wastes, and characterization requirements for waste storage, treatment, and subsequent disposal. Thus, not all of the parameters identified in Tables C-1 and C-2 will be selected for each waste stream.

HEPA Filter Leaching System

There are two potential treatment residuals from the HFLS process. The principal waste stream is the leachate from the nitric acid/water solution leaching process. The stream is piped to a drain, which goes to holdup tank VES-NCD-123 or collection tank VES-NCD-129. The leachate is subsequently transferred to the PEWE, the NWCF processes, or the Tank Farm Facility (TFF). In addition to the leachate, a minor amount of fiberglass residuals may be collected after the process is completed in the strainer leading to the tank system for the leachate disposal. These treatment residuals are evaluated per parameters and rationale of Tables C-1 and C-2. Treated filters are evaluated per clean debris surface standard and TCLP testing, as outlined in Section C-3d(1).

Sinks, Steam Spray Booth, Soak Tanks, Ultrasonic Cleaner, Decon Cubicles, and Decon Cell

Treatment residuals from the sinks, steam spray booth, soak tanks, ultrasonic cleaner, decon cubicles, and decon cell will be liquids[7]. The liquids will be evaluated prior to release to the PEWE, TFF, or NWCF processes to meet the waste acceptance criteria of the units. These treatment residuals are evaluated per parameters and rationale of Tables C-1 and C-2. Other treated debris are evaluated per clean debris standard and TCLP testing as outlined in Section C-3d(2).

[7] When solid carbon dioxide blasting or spalling/scarification is used in the steam spray booth, the solid residuals will be collected and evaluated separately from treatment solutions.

C-2a(1) Waste Acceptance Criteria

Any wastes accepted at the waste management units addressed in this permit must meet the WAC as defined below. Prior to being accepted at these units, a representative of Waste Generator Services (WGS) [currently identified as a waste technical specialist (WTS)[8]] evaluates each waste to ensure the WAC have been met. The preacceptance process is described in detail in Section C-2a of this WAP. The WAC are dependent on the waste form, EPA HWNs specified on the Part A, method of characterization, waste characteristics, and packaging. Waste generators or INTEC point-of-generation personnel are responsible for performing necessary characterization in accordance with the methods specified in this section (See Tables C-1 and C-2).

The following wastes and containers are prohibited from the waste management units addressed in this permit:

- Wastes designated with EPA HWNs not identified on the Part A permit application for the specified receiving treatment and/or storage unit
- Incompatible wastes within the same container or wastes not compatible with the container in which they are stored
- Wastes incompatible with the liquid waste system or with wastes in the liquid waste system (holdup and collection tanks)
- Liquid or liquid-bearing wastes (CPP-659/1659 and FDP Cell container storage only)
- Unstable, shock-sensitive, and Department of Transportation (DOT)-defined pyrophoric materials

[8] A WTS identifies the appropriate Treatment, Storage, and Disposal Facility (TSDF) in which to manage waste and ensures that wastes intended for a given TSDF meet the WAC for the unit. A WTS tracks the waste from its point of generation through ultimate disposal. A WTS is assigned to each RCRA-regulated waste stream generated or received at the INEEL. This individual assists generators in the initial hazardous waste determination and characterization of the waste as necessary. Before the waste is accepted and placed into RCRA-regulated storage, another WTS verifies that no errors were made during the initial hazardous waste determination and subsequent characterization.

- Wastes containing undeclared hazardous materials
- Unknown wastes
- Hazardous or mixed wastes containing DOT Class 1 explosives or Class 4 Division 4.1 flammable solids meeting the definition of a wetted explosive, as identified in 49 CFR 173 Subpart C
- Active pathogens, infectious, or etiologic agents
- Wastes which do not comply with the 40 CFR 268.3 dilution prohibition
- Contained wastes in which the outer container is not free of bulges, holes, swelling, significant rust, ice, snow, dirt, dents, or similar evidence of degradation or mishandling
- HEPA filters exceeding 2 ft 11 in. x 2 ft 5 in. x 1 ft 4 in. (HFLS only)
- HEPA filters containing cellulose-based material, e.g., wood, paper (HFLS only)
- Pressurized containers (DTUs only)
- Wastes that generate liquid treatment residuals possessing constituents that do not comply with the WAC of downstream treatment, storage, or disposal units (e.g., the PEWE). This assessment is performed on a case-by-case basis.

C-2a(2) Waste Acceptance Process

When an activity is expected to generate a new waste, or upon the generation of a waste, the WTS is contacted for guidance. Existing legacy waste will be evaluated and characterized prior to treatment as described below. See Figure C-1 for a flow diagram of the preacceptance process for on-Site waste. See Figure C-2 for a flow diagram of the preacceptance process for off-Site waste. Waste generated off-Site must be verified in accordance with the waste analysis plan (WAP) requirements of IDAPA 58.01.05.008 [40 CFR § 264.13(c)] at an approved facility before it can be accepted at any of the units addressed in this permit. An initial process knowledge evaluation of the waste stream is conducted to determine if the waste is from a recurring stream with an approved waste profile on file. If the stream has an approved profile on file, the process and waste are evaluated to ensure the waste is consistent with the approved profile. All approved waste stream profiles are reevaluated in accordance with Section C -2d, "Frequency of Analysis," of the waste acceptance process. Table C-4 summarizes the minimum parameters to be evaluated during the waste pre-acceptance process.

If the waste stream does not match an existing profile, a WTS is assigned to evaluate the waste stream and determine its final disposition. The WTS initiates a hazardous waste determination as required by 40 CFR 262.11. Process knowledge information is obtained by using the Waste Determination & Disposition Form (WDDF). An example of a typical WDDF is included as Appendix C-2. The WDDF provides the preacceptance certification needed prior to accepting on-Site wastes. If process knowledge is not sufficient, sampling and analysis is conducted. If the waste is clearly not RCRA-regulated hazardous waste, it is managed in accordance with its properties (e.g., low-level, industrial, etc.).

If the waste is determined to be RCRA hazardous, based on the initial data obtained from the hazardous waste determination, the WTS performs an LDR evaluation and then evaluates the TSDF options available. Once an appropriate TSDF is identified, the WTS arranges for additional waste characterization, as needed, for acceptance to the TSDF. Waste characterization data and supporting documentation are filed and made available for both generators and TSDFs through the IWTS on-Site. The resulting information is entered into the IWTS material profile(s) and container profile(s).

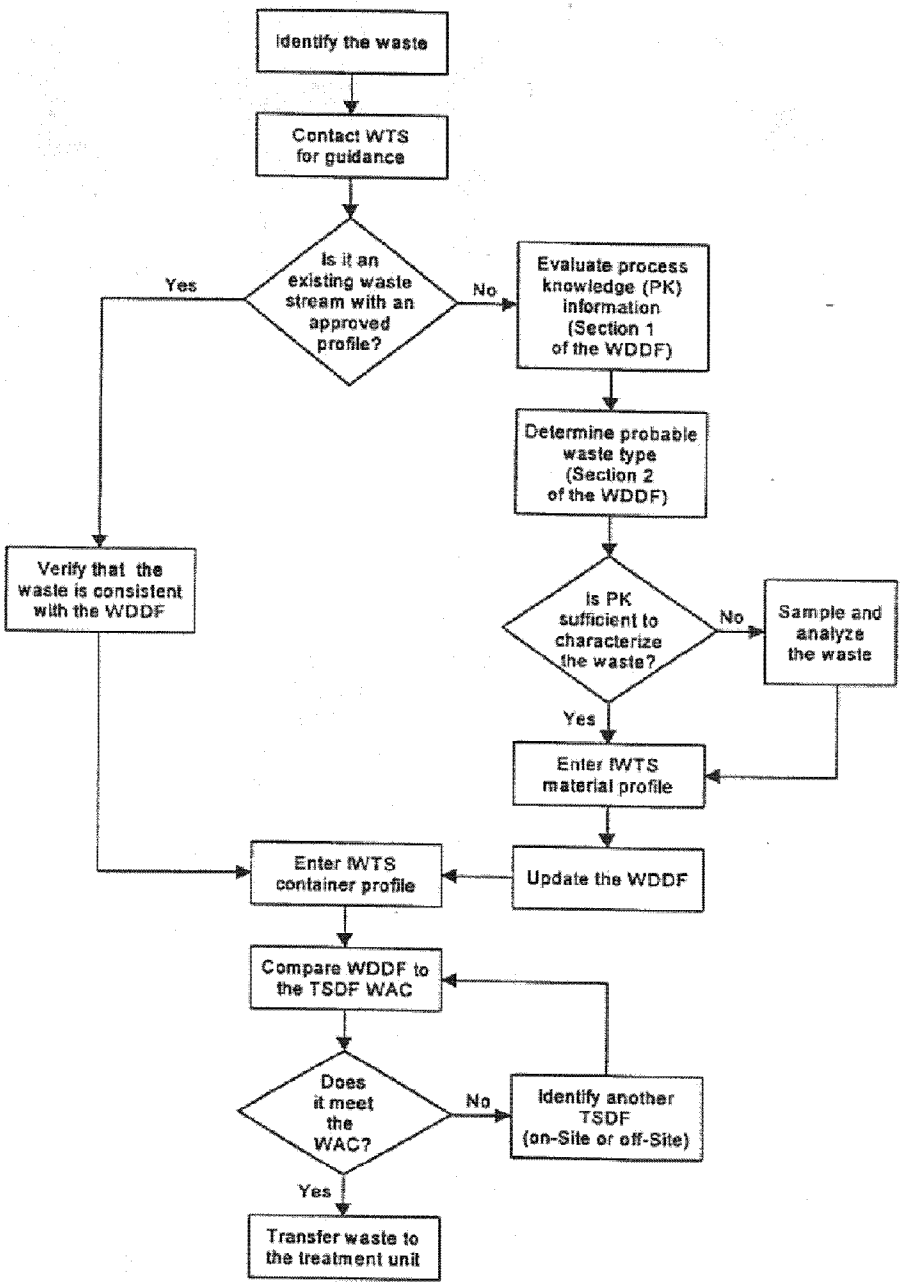

Figure C-1. Preacceptance Flow diagram for On-Site Waste.

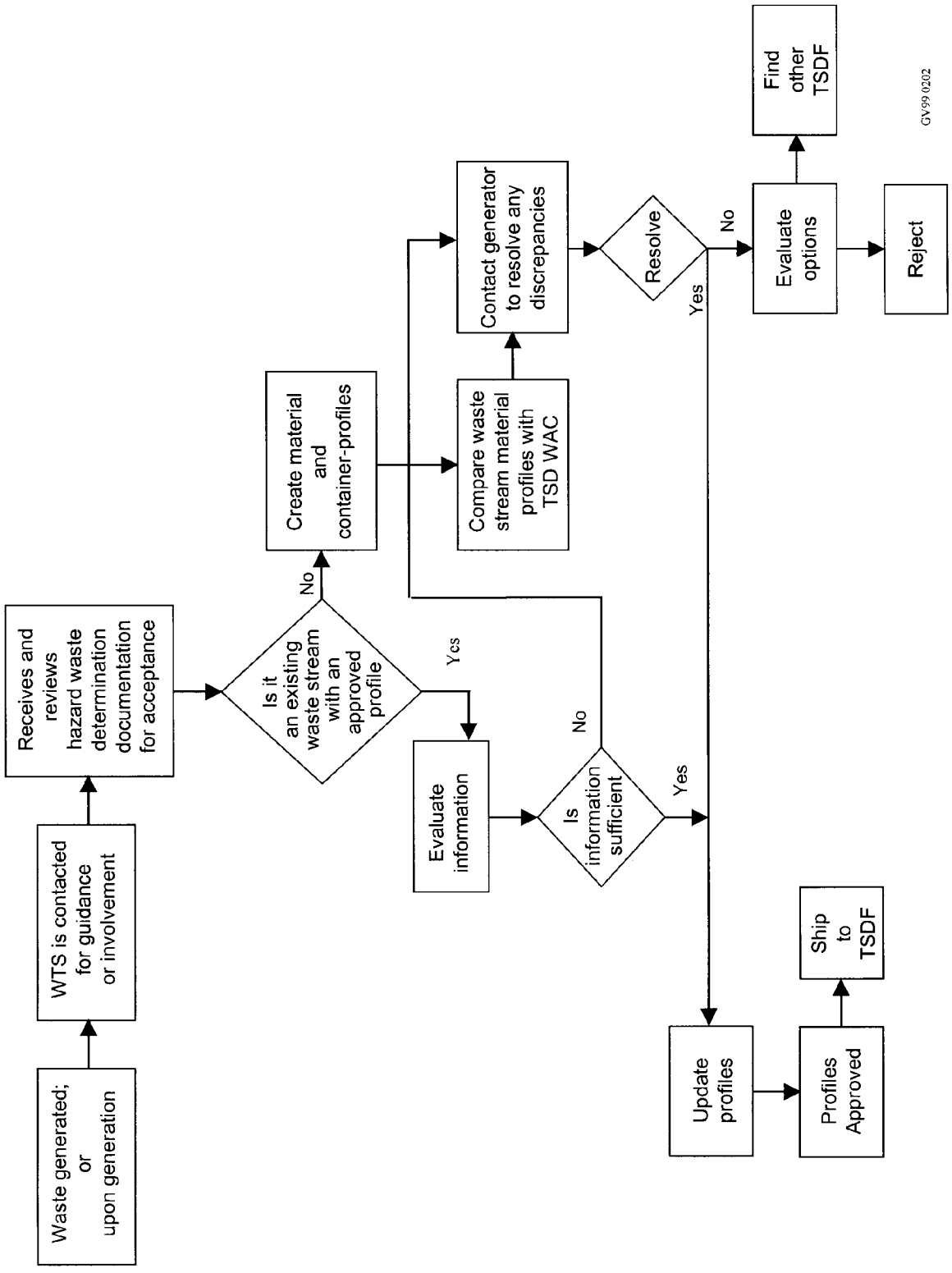

Figure C-2. Preacceptance Flow Diagram for Off-Site Waste.

The IWTS is an electronic database for tracking the storage, transfer, treatment, and on-Site disposal of waste at the INEEL and off-Site. The IWTS database contains the characterization information applicable to waste streams at the facility or the disposition of waste at or from the facility. The waste profile contains characterization data that bounds the waste stream, list of containers, generator certifications, and approvals. Container profiles track container-specific data, approvals, and task summaries for waste movement, placement, processing, and disposal of the waste. Task profiles also verify the permit capacity prior to receiving or shipping waste. IWTS was developed as a tool to assist personnel in completing daily activities an complying with the regulatory requirements, and to assist INEEL Site treatment personnel in meeting Site-wide mixed waste data tracking and reporting needs. Features of the IWTS include:

- Electronic material and container profiles
- Shipping descriptions (not for infra-facility transfers)
- Manifests
- Electronically tracking waste inventory
- Tracking the genealogy of waste from cradle to grave
- Creating and executing administrative tasks.

If the waste stream does not meet the acceptance criteria for the intended unit(s), another TSDF is identified (either on- or off-Site) that can compliantly accept the waste. Compliance with "acceptance criteria" implies compliance with the container requirements of the unit-specific Part A permit application, Section D (Attachment 1a), and adherence to the list of prohibited items in Section C-2a(1).

A second WTS independently verifies the shipment as a further assurance that the waste has been adequately and correctly characterized as well as properly packaged. This verification consists of reviewing the available information. If questions arise during this evaluation, additional characterization may be required for resolution, or it may be necessary to open some of the waste containers to verify the waste form and type.

Once the waste is determined to be acceptable for a given TSDF, the receiving unit is contacted to coordinate shipment of the material. The WTS coordinates with appropriate personnel to establish the proper packaging for the waste type, with regard to its characteristics and the receiving unit's WAC.

When resubmittal of a new WDDF is required, in accordance with Section C-2d, "Frequency of Analysis," a new preacceptance evaluation will be conducted. Recertification of existing forms requires written and signed documentation from the generator stating that the waste stream and corresponding forms remain the same as presently approved by the WTS. Recertification also requires that there have been no significant changes in the process generating the waste, the physical and chemical properties of the waste, or the LDR status of the waste per IDAPA regulations.

Wastes to be received at the waste management units addressed in this permit may be received from other INEEL locations. The waste may be shipped directly to the waste management unit, or it may initially be received at the RMWSF or the HCRMWSF container storage units. In either case, the methodology for receiving and accepting the waste shipment will be the same.

Wastes transferred within the INTEC perimeter are not subject to DOT shipping requirements. However, shipping and receipt of waste from outside the INTEC are subject to DOT shipping requirements.

Hazardous and/or mixed waste and debris generated at CPP-659 may be transferred to either the storage or treatment areas addressed in this permit directly from the point of generation. Prior to transfer of waste, an evaluation is made to ensure that the constituents associated with the waste meet those specified in the Part A permit application, and that the waste form meets the applicable WAC for the intended unit. Uncontainerized wastes (e.g., HEPA filters, piping, valves, tools) within CPP-659 may be transferred directly from the point of generation to one of the waste pile storage areas.

LDR Requirements

Point-of-generation facility personnel provide waste characterization information and use this information to complete LDR notifications, per IDAPA 58.01.05.011 (40 CFR 268.7). In cases where facility personnel determine that an LDR waste does not meet the applicable treatment standard(s) set forth in IDAPA 58.01.05.011 (40 CFR 268, Subpart D), or exceeds the applicable prohibition level(s) set forth in IDAPA 58.01.05.011 (40 CFR 268.32) or Section 3004(d) of RCRA, facility personnel provide written notice in accordance with IDAPA 58.01.05.011 [40 CFR 268.7(a)(1)(ii)].

In cases where facility personnel determine that a restricted waste is being managed that can be land-disposed without further treatment, facility personnel submit written notice stating that the waste meets (or is exempt from) applicable treatment standards set forth in IDAPA 58.01.05.011 (40 CFR 268, Subpart D) and the applicable prohibition level(s) set forth in IDAPA 58.01.05.011 (40 CFR 268.32) or Section 3004(d) of RCRA. The notice must be in accordance with IDAPA 58.01.05.011 [40 CFR 268.7(a)(2)].

Required LDR notices are provided by point-of-generation facility personnel and transmitted to the waste management unit personnel receiving the waste. If the waste is shipped from the point of generation to a storage unit prior to treatment, personnel from the receiving storage unit will forward the notifications to the treatment unit personnel upon waste shipment to the treatment unit. The notifications are reviewed by facility personnel prior to waste treatment and are entered into the treatment unit's operational log.

C-2b. Test Methods [IDAPA 58.01.05.008; 40 CFR 264.13(b)(2)]

Waste Analysis

Analytical methods employed are primarily taken from *EPA's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846, Current Edition). In those cases where method-defined parameters[9] are required by regulation, SW-846 methods are always employed. Examples of method-defined parameter methods, where the analytical result is wholly dependent on the process used to make the measurement, include the use of the toxicity characteristic leaching procedure (TCLP) to prepare a leachate, flash point, pH, corrosivity tests, and paint filter liquids. The cited test methods will be performed at the laboratories per controlled implementing procedures.

The U.S. EPA provides for a degree of flexibility in the use of SW-846 and other approved methods. This flexibility is dependent on the maintenance of precision, accuracy (or bias), recovery, representativeness, comparability, and sensitivity (detection, quantitation, or reporting limits) relative to the data quality objectives for the intended use of the analytical results. "If an alternative analytical procedure is employed, then EPA expects the laboratory to demonstrate and document that the procedure

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[9]. "The use of an SW-846 method is mandatory for the following Resource Conservation and Recovery Act (RCRA) applications contained in 40 CFR Parts 260 through 270:

- Section 260.22(d)(1)(I) - Submission of data in support of petitions to exclude a waste produced at a particular facility (i.e., delisting petitions)
- Section 261.22(a)(1) and (2) - Evaluation of waste against the corrosivity characteristic
- Section 261.24(a) - Leaching procedure for evaluation of waste against the toxicity characteristic
- Section 261.35(b)(2)(iii)(A) - Evaluation of rinsates from wood preserving cleaning processes
- Sections 264.190(a), 264.314(c), 265.190(a), and 265.314(d) - Evaluation of waste to determine if a free liquid is a component of the waste
- Sections 264.1034(d)(1)(iii) and 265.1034(d)(1)(iii) - Evaluation of organic emissions from process vents
- Sections 264.1063(d)(2) and 265.1063(d)(2) - Evaluation of organic emissions from equipment leaks
- Section 266.106(a) - Evaluation of metals from boilers and furnaces
- Sections 266.112(b)(1) and (2)(I) - Certain analyses in support of exclusion from the definition of a hazardous waste for a residue which was derived from burning hazardous waste in boilers and industrial furnaces
- Sections 268.7(a), 268.40(a), (b), and (f), 268.41(a), 268.43(a) - Leaching procedure for evaluation of waste to determine compliance with land disposal treatment standards
- Sections 270.19(c)(1)(iii) and (iv), and 270.62(b)(2)(I)(C) and (D) - Analysis and approximate quantification of the hazardous constituents identified in the waste prior to conducting a trial bum in support of an application for a hazardous waste incineration permit
- Sections 270.22(a)(2)(ii)(B) and 270.66(c)(2)(I) and (ii) - Analysis conducted in support of a destruction and removal efficiency (DRE) trial bum waiver for boilers and industrial furnaces burning low risk wastes, and analysis and approximate quantification conducted for a trial bum in support of an application for a permit to burn hazardous waste in a boiler and industrial furnace. Federal Register, Thursday, November 20, 1997, Vol. 62, No. 224, 62079.

is capable of providing appropriate performance for its intended application. This demonstration must not be performed after the fact, but as part of the laboratory's initial demonstration of proficiency with the method. The documentation should be in writing, maintained in the laboratory, and available for inspection upon request by authorized representatives of the appropriate regulatory authorities (SW-846, Chapter Two, 'Choosing the Correct Procedure')."

Joint EPA/Nuclear Regulatory Commission (NRC) guidance[10] for mixed waste also provides flexibility in sample sizes with method-defined parameter methods, as long as the resulting test is sufficiently sensitive to measure the constituents of interest at the regulatory levels prescribed in the TCLP. Other variances to published testing and sampling protocols are permissible under 40 CFR 260.20-21, but must be approved prior to implementation by the Director of the Idaho Department of Environmental Quality (DEQ).

The EPA allows for the use of recognized methods other than those prescribed in SW-846. "Whenever methods from SW-846 are not appropriate, recognized methods from source documents published by the EPA, American Public Health Association (APHA), American Society for Testing and Materials (ASTM), the National Institute for Occupational Safety and Health (NIOSH), or other recognized organizations with appropriate expertise should be used, if possible (SW-846, Chapter One)."

Because of the broad range of acceptable methods available for testing specific constituents, and with the rapid incorporation/deletion of methods, not all of the SW-846 methods are specified in Tables C-1 and C-2. Only the method-defined parameter methods are specified by specific numbers.

Certain waste streams are generated at the INTEC which require remote handling and are subject to full RCRA characterization requirements. The remote sample handling requirements and specific process stream requirements cause deviations in some required analyses systems. For example, the EPA has determined that "if the analyst can demonstrate that the test is still sufficiently sensitive (in the case of reduced sample size in a TCLP extraction) to measure the constituents of interest at the regulatory levels specified in the TCLP and representative of the waste stream being tested" then the sample size can be legitimately decreased[10]. Sample size becomes a critical factor, especially with respect to radiation exposure hazards, and therefore, must be a factor for consideration in any sampling or analytical activity.

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10. *Federal Register*, Thursday, November 20, 1997, Vol. 62, No. 224, 62079.

The analyses may be performed at INEEL laboratories or at approved off-Site laboratories. Laboratories contracted by the M&O contractor to perform outside work are audited periodically, to ensure that each laboratory's quality control procedures and standard practices manuals meet the requirements for laboratories conducting EPA test procedures. If the laboratory has not been audited, or has failed to conform to the audit criteria, that laboratory is not authorized by the M&O contractor to conduct waste characterization analysis.

Process Knowledge

The EPA/ NRC guidance emphasizes the use of process knowledge to determine if a radioactive waste is hazardous, as a way to avoid unnecessary exposures to radioactivity. The types of information that may be used as process knowledge (for either mixed or hazardous only waste) include, but are not limited to, the following:

- Chemical/material composition specifications - chemical specifications may be available from the purchase specifications of the particular chemical in question, from product information provided by the manufacturer, or from the labels for the particular chemical in question. For pure chemicals, where the material contents and characteristics are well known (e.g., hydrofluoric acid), standard chemical reference materials may supply the required information. Standard material composition reference tables may supply the required information for metals, plastics, and other materials manufactured to certain grades, alloy specifications, etc., where the material contents and characteristics are well known (e.g., Type 304 stainless steel).

- Material safety data sheets (MSDSs) - chemical specifications and related information are available on these standard reference materials. The MSDSs may be provided by the manufacturer, or acquired through available MSDS data bases.

- Process description - pertinent details of the process generating the waste and the chemicals used that have generated the waste must be described. The more complex the process, the more information would be required, such as process flow diagrams and listings of chemicals used or introduced at various points prior to the waste stream being generated.

- Previous analytical information.

If process knowledge is adequate to ensure that a particular constituent is not present in the waste, then there is no requirement to analyze for that constituent. For instance, if the waste comes from a well-defined aqueous process and there are no organic chemicals associated with that process, then it is not necessary to test for volatile or semivolatile organics. Similarly, if there is no reason to suspect pesticides or herbicides, analysis for those parameters (constituents) is not required. However, waste characterization documentation must establish that there is no reason to suspect the constituent is in the waste. This can be accomplished by including a detailed process description, published data for the process or materials used, or both.

C-2c. Sampling Methods [IDAPA 58.01.05.008 and 58.01.05.005; 40 CFR 264:13(b)(3) and 262, Appendix I]

Facility personnel are responsible for initially characterizing wastes to be managed at the waste management units addressed in this permit. Facility personnel can use process knowledge and/or analytical methods to adequately characterize waste. As part of the characterization process, facility personnel select the appropriate sampling method, based on knowledge of the waste material matrix [e.g., solid, liquid, sludge, radiological component and As Low As Reasonably Achievable (ALARA) considerations] and specific analytes of interest. Facility personnel are also responsible for arranging all sampling and laboratory support and for sample shipments. Sampling personnel document the sampling activities and chain of custody.

When collected, representative waste samples are obtained in accordance with the sampling approaches described in Chapter Nine of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, current edition. Samples are collected using appropriate equipment and methods identified in, but not limited to, the following sources:

- EPA Test Methods for Evaluating Solid Waste, SW-846, Chapter 10, "Sampling Methods," Third Edition

- 40 CFR 261, Appendix I, "Representative Sampling Methods"

- Annual Book of ASTM Standards, American Society for Testing and Materials, Current issue

- Characterization of Hazardous Waste Sites - A Methods Manual. Volume II: Available Sampling Methods, EPA-600/4-84-076, 2nd Edition, December 1984

- Characterizing Heterogeneous Wastes: Methods and Recommendations, EPA/600/R-92/033, February 1992

- EPA Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes: A Guidance Manual, April 1994

- Other recognized methods from source documents published by the EPA, American Public Health Association, American Society for Testing and Materials, the National Institute for Occupational Safety and Health; or other recognized organizations with appropriate expertise.

Sampling methods that deviate from approved or other recognized methods must be approved prior to implementation by the Director of the DEQ.

C-2c(1) Standard Sampling Methods

Table C-3 lists example methods used to obtain representative samples from various waste forms. These methods may need to be modified as a result of high radiation fields or difficult to sample items, such as HEPA filters and other types of mixed waste (e.g., valves and piping). Sampling will be conducted in accordance with approved sampling and operating procedures. In general, where standard samples are collected, the following basic sampling procedure used:

- Obtain samples using precleaned sample equipment, in accordance with the applicable method.

- Fill sample containers. Uniquely identify and label each sample, and document necessary information in the field record (e.g., location, time, characteristics).

- Properly clean and decontaminate the exterior of the sample containers and the sampling hardware.

Table C-3. Example Methods and Strategies for Sampling Wastes.

Primary Matrix	Waste Composition	Sampling Equipment	Sampling Strategies
Non-metal debris	Asphalt, uncoated concrete, firebrick, cinder block	Impact hammer (hammer and chisel), rotating coring device	Size-reduced composite sample
	Uncoated wood	Rotating coring device	Size-reduced composite sample
	Coated concrete, coated wood	Rotating coring device, shredder, scissors, shears, or other appropriate equipment	Size-reduced composite sample
	Glass, plastic	Shredder, scissors, shears, impact hammer for fracturing, etc.	Size-reduced composite sample
	High-efficiency particulate air (HEPA) filters, composite filters	Shredder, scissors, shears, scoop, spoon Rotating coring device	Shredding, cutting, or shearing an appropriately sized sample Size-reduced composite sample (Size-reduced composite sample, where applicable
	Plastic bags, baghouse bags, personal protective equipment	Shredder, scissors, shears, scoop, spoon	Shredding, cutting, or shearing an appropriately sized sample (Size-reduced composite sample, where applicable)
	Filter media	Shredder, scissors, shears, scoop, spoon Rotating coring device	Shredding, cutting, or shearing an appropriately sized sample Size-reduced composite sample, where applicable
	Rubber	Shredder, scissors, shears, scoop, spoon	Shredding, cutting, or shearing as appropriately sized sample (Size-reduced composite sample, where livable
	Paper, cloth	Shredder, scissors, shears, scoop, spoon	Shredding, cutting, or shearing an appropriately sized sample (Size-reduced composite sample, where applicable)

Table C-3. Example Methods and Strategies for Sampling Wastes (continued).

Primary Matrix	Waste Composition	Sampling Equipment	Sampling Strategies
Metal debris	Metal tools, structural steel, steel pipe, rebar, assorted scrap	Drill, rotating coring device	Size-reduced composite sample
	Drums; cans, furniture, motors/pumps, construction hardware (nails, screws, etc.)	Drill, rotating coring device	Size-reduced composite sample
Contaminated equipment (metal)	Machinery, tools, glove boxes	Drill, rotating coring device	Size-reduced composite sample
Contaminated equipment (non-metal)	Glass, plastic	Shredder, scissors, shears, impact hammer for fracturing, etc.	Size-reduced composite sample
Contaminated equipment (non-metal)	Rubber	Shredder, scissors, shears, scoop, spoon	Shredding, cutting, or shearing an appropriately sized sample
Free-flowing liquids and slurries	N/A	COLIWASA or peristaltic pump (containers) double hypodermic needle sampler (tanks)	Composite sample
Sludges	N/A	Trier, Scoop, Dipper	Grab sample
Moist powders or granules	N/A	Trier, Scoop	Grab sample
Dry powders or granules	N/A	Thief, Scoop, Shovel	Grab sample
Sand or packed powders and granules	N/A	Auger, Scoop, Tube, Shovel	Grab sample
Large grained solids	N/A	Large Trier, Shovel	Grab sample

COLIWASA = Composite Liquid Waste Sampler

- Place containers in a durable ice-filled cooler or comparable receptacle for storage or transport to the laboratory. The sample containers may use bubble wrap or other protective material before placement in the cooler or comparable receptacle, if necessary. Install custody seals to ensure sample integrity.

- Complete the chain-of-custody forms. Retain a record copy.

- Review: all paperwork and attach the forms to the cooler or comparable receptacle.

- Seal the coolers or comparable receptacles, and mark them in accordance with DOT and/or procedural requirements.

- Transport samples to the analytical laboratory.

Sampling procedures for certain mixed wastes may deviate from the standard sampling protocols, due to the hazards associated with radioactive materials. For example, due to radiological concerns, the use of remotely operated sample transfer systems may limit the size of sample containers, prevent sealing of the transfer receptacle, or preclude chain-of-custody and other documentation from directly accompanying the samples. However, all sampling procedures are consistent with the stated goals of SW-846, to collect representative samples and to maintain their physical and chemical integrity.

Equipment used to sample waste is disposable or designed for decontamination. Contaminated disposable equipment is managed appropriately. Equipment that can be cleaned and reused, as opposed to discarded, is thoroughly decontaminated before reuse or storage. Decontamination solutions are managed appropriately.

Prior to treatment of debris, if the generator has no knowledge of the materials in the waste or the processes) that generated the waste, the generator or point-of-generation personnel must perform a hazardous waste determination, per 40 CFR 262.11. The debris can be initially sorted by radioactive hazard category, as follows:

- Low-level mixed waste

- Transuranic mixed waste

- High-level mixed waste.

The debris may be sorted by form or type, to facilitate sampling, management, and final disposition. Sorting would also include determining whether the debris has fixed and/or removable radioactive on. This is accomplished through the use of surface swipes and/or hand held instruments.

C-2c(1)(a) Debris Sampling Methods

Debris may be sampled if the generator has no knowledge of the materials in the waste or the process(es) that generated the waste. The sampling method used to characterize debris depends on the type of material. Appropriate sampling strategies include cutting, sizing, or coring porous material for laboratory analysis. For example, stabilized or other solidified debris may require mechanical coring (e.g., reverse rotary coring); if mechanical coring is used, coolants and dusts are captured and managed appropriately. In any case, representative random samples must be gathered for laboratory sizing and analysis.

Fibrous combustibles, such as Tyvek® and baghouse bags, are best sampled by shredding, cutting, or shearing appropriately sized samples for laboratory analysis. Solid form combustibles, including Benelex and Plexiglas, are best sampled using a mechanical devise for sizing, such as a diamond saw or concrete corer. Combustible papers, filter media, and other paper-like materials may be sampled by cutting, shredding, or ripping samples of similar size.

Absorbents, absorbed liquids, pelletized materials, and other unconsolidated debris can be sampled using the more conventional EPA and ASTM strategies.

Sampling methods for treated debris are conducted in accordance with Table C-3 and the requirements of Section C-2d, as applicable, provided the debris meets the clean debris surface criteria. After achieving the clean debris surface standard, three grab samples may be taken from the debris and composited for analysis.

C-2c(2) Field Records

Records provide the direct evidence and support for the necessary technical interpretations, judgments, and discussions concerning project activities. These records, particularly those anticipated to be used as evidentiary data, directly support current or ongoing technical studies and activities, and provide the historical evidence needed for later reviews and analyses.

Field records may consist of bound field notebooks, sample collection forms, personnel qualification and training forms, sample location maps, equipment maintenance documentation, chain-of-custody forms, and/or sample analysis request forms. Records may include (but are not limited to) the following, as applicable:

Sample Collection - To ensure maximum utility of the sampling effort and resulting data, documentation of sampling protocol, as performed in the field, is essential. Sample collection records may contain the names of persons conducting the activity, sample number, sample location, equipment used, climatic conditions, documentation of adherence to protocol, and unusual observations.

Chain-of-Custody Records - The chain of custody involving the possession of samples from the time they are obtained until they are disposed or shipped off-Site are documented, and may include the following information: (1) the project name; (2) signatures of samplers; (3) the sample number, date and time of collection, and grab or composite sample designation; (4) signatures of individuals involved in sample transfer; and (5) if applicable, the air bill or other shipping number.

Quality Control (QC) Samples - Documentation for generation of QC samples, such as trip and equipment rinsate blanks, duplicate samples, and any field spikes, are maintained.

Deviations - All deviations from participated sampling and analysis protocols are recorded in the site logbook or project records.

Reports - A copy of any report issued and any supporting documentation are retained.

C-2c(3) Quality Control

Defensible and valid data are obtained through implementation of the processes controlling characterization and/or sampling and analysis. In addition, defensible and valid data require the implementation of the process of field and laboratory control samples, data validation, sampling performance assessments, and, as necessary, corrective action(s) as identified in this section.

C-2c(3)(a) Field Control Samples

Control samples are QC samples that are intended to monitor the performance of the sampling system. In accordance with this WAP, the following field control samples may be collected:

- Field duplicates
- Equipment rinsate
- Trip blank-sample.

C-2c(3)(b) Laboratory Quality Control

The INEEL maintains a laboratory certification program that includes a rigorous assessment and validation of the Quality Assurance/Quality Control (QA/QC) program at the laboratories. Depending on the data end use and overall data quality objectives (DQOs), the laboratory QA/QC control samples may include:

- Matrix spike
- Matrix duplicate
- Matrix spike duplicate.

C-2c(3)(c) Data Validation

Depending on the data end use and overall project DQOs, data validation may include evaluation of the following subjects:

- Completeness of laboratory records with regard to processing of all required samples and analyses
- Implementation of appropriate procedures
- Evaluation of sample analytical data to required detection and quantity
- Evaluation of QC analytical data to applicable control criteria
- Comparison of sample holding times to the required holding times prescribed by this WAP.

All deviations from the applicable guidance are documented and corrective actions implemented, as necessary.

C-2c(3)(d) Sampling Performance Assessment

A key function of a QC program is the periodic assessment of activities for conformance to required protocols. Sampling performance assessments may evaluate the following activities:

Completeness of Field Reports - This evaluation determines that a complete record exists for each field activity, and the procedures specified by this WAP or the documents implementing this WAP were executed.

Identification of Valid Samples - This review involves the evaluation and interpretation of field records to detect problems affecting the representativeness of samples.

All resultant concerns are documented and corrective actions implemented, as necessary.

C -2c(3)(e) Corrective Action

Corrective action measures can be divided into two categories as follows:

Project Corrective Action - Corrective actions are performed when the project objectives are not met, when conditions adverse to quality have been identified, or when an assessment of data reveals questionable or unknown data quality. Conditions adverse to quality are identified promptly, and corrected as soon as possible. When significant conditions adverse to quality are identified, the causes are determined, and corrective actions to prevent their recurrence are performed and documented.

Laboratory Corrective Actions - The contract laboratory possesses a QA program plan identifying warning, control, and rejection limits and what actions will be taken when the warning, control, and rejection limits are exceeded. Warning conditions may require only more frequent observations of a piece of equipment, while rejection conditions require instrument maintenance and reanalysis of all samples run in the out-of-control condition.

C-2d. Frequency of Analysis [IDAPA 58.01.05.008; 40 CFR 264.13(b)(4)]

Waste streams generated several times a year from highly controlled processes in which the waste composition remains consistent for the duration of the year are initially characterized and re-characterized when:

- The process generating an established waste stream changes
- The waste characteristics are highly variable from shipment to shipment
- There is reason to suspect a change in the waste based on inconsistencies in the manifest, packaging, or labeling of the wastes, or there are inconsistencies between the waste verification results and the waste characterization data provided by the generator
- TSDF personnel reject the waste because it fails verification
- An off-Site TSDF rejects the waste due to improper characterization.

TSDF personnel can require additional waste analysis to substantiate waste characterization data.

C-2e Additional Requirements for Wastes Generated Off-Site [IDAPA 58.01.05.008; 40 CFR 264.13(c)]

Wastes generated off-Site may be accepted at the permitted units for storage and subsequent treatment in an INEEL treatment unit. These wastes are initially brought into an INEEL storage unit pending treatment. The off-Site generator must provide adequate documentation to ensure the waste is adequately characterized in accordance with the requirements stipulated in this WAP (for data quality, WAC, and acceptable methods). All off-Site waste shipped to the INEEL must undergo waste verification before acceptance. This verification may occur at either the RMWSF or HCRWSF upon receipt, or other approved locations, or at the generator site prior to shipment

Ten percent of the off-Site hazardous waste and five percent of the off-Site mixed waste received at the INEEL undergo verification. This verification percentage is based on the total number of containers in each waste shipment or waste stream.

The waste verification may be performed upon delivery to the INEEL, before finally accepting the waste at a permitted unit, or at the generator's location before shipping. In this instance, the shipping containers are sealed at the generator site with tamper-indicating devices to ensure the waste received is the same as the waste that underwent verification. Regardless of whether the verification is performed at the INEEL or the generator location, the requirements contained in this section are followed for all off-Site wastes intended for management at the INEEL.

Each waste container is assigned a container identification number. Specific containers in a shipment are randomly selected for verification by using the container identification number in conjunction with a random number table or random number generator. Containers in addition to the appropriate percentage may be selected for verification at the discretion of the INEEL personnel performing the verification. The verification program is implemented to ensure the waste received by the unit matches the expected physical and chemical characteristics of the waste from the generator-supplied characterization information. A sample technician or individual trained in sampling in the presence of another designated verification individual performs the verification. A review of the applicable waste stream profiles is conducted to determine if there are specific safety concerns, compatibility of the sampling equipment and containers, appropriate sampling devices, analytical test procedures for the

particular waste stream, and approved procedures for sample collection and analysis for the specific waste stream. All information is recorded and placed into facility files. Prior to conducting verification facility support, such as Radiological Control Technician (RCT) and Industrial Hygiene (IH), as needed is contacted. The type of equipment used for verification depends on the type of media being sampled, such as liquid, solid, or semisolid. Before a sample is extracted the following is performed:

- Ensure the packaging, marking, and labeling on the waste container(s) are consistent with the information provided on the waste profiles

- Ensure facility support personnel have performed surveys of the waste and confirm the levels match what is listed on the container profile

- Ensure all required personal protective equipment identified by facility support be provided to team participants

- Weigh container and record weight on facility forms

- Move container into the sampling area.

Waste verification involves opening waste containers for visual inspection or performing a qualitative field test parameter to insure that the waste in the container is the same that was approved for shipment and matches the description on the waste characterization data package and shipping papers. The waste containers are opened at RMWSF CPP -1617 or HCRWSF CPP-1619. Verification is relayed to INEEL personnel involved with verification by obtaining the waste profile pertaining to the specified waste stream and checking various parameters to ensure the waste stream is consistent with the waste profile.

Physical characteristics of the waste examined during the visual waste verification process include color, volume, phases, physical state, and layering. The qualitative field-test parameters, test methods, and ranges of acceptance are identified in Table C-4. The verification information is documented in a verification checklist for inclusion in the waste verification logbook. Each step in the verification checklist is initialed off by the person performing the verification. A signature at the beginning of the checklist and the initials at each item verify approval of the verification process. INEEL personnel perform all qualitative tests and verify the results of the tests at the time of performance in

accordance with the ranges established for acceptance. Laboratory packs are verified by comparing the inventory provided by the generator with the waste characterization data package to the contents of the laboratory packs.

Upon detection of discrepancies between the generator's waste characterization data and the results of the verification activities, the discrepancies are immediately addressed. Resolution of discrepancies ranges from immediate on-the-scene resolution to the rejection of the waste shipment.

A waste is nonconforming if the verification test results fall outside the specified parameter ranges shown on Table C-4. Once a waste discrepancy is noted, the waste is placed on hold, for storage or treatment, until the discrepancy is resolved. All available data relevant to the discrepancy (including the verification test results, WDDF characterization, and waste history) is evaluated. If the discrepancy can be resolved based on available information, waste processing may continue. If not, additional information will be gathered. Additional information may be obtained from further testing of the waste received, consultation with the generator, or from other references. The additional analyses could include a recheck of selected verification parameters as well as discretionary parameters to augment the characterization of the waste. If the discrepancy is resolved, the waste will be reevaluated using the preacceptance criteria. If discrepancies cannot be resolved or if it is determined the waste is not acceptable per the preacceptance criteria in time to process the shipment the day it arrives at the storage unit, the shipment may be returned to the generator or stored on the truck. If the discrepancy is not resolved within 15 days after receiving the waste, the DOE M&O contractor will immediately submit a letter to the Regional Administrator, describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue. If the waste is rejected, the waste will be shipped back to the generator.

Table C-4. Qualitative waste verification parameters.

Parameter	Acceptance Range	
	Test Method	Test Results
pH	pH paper or meter	Paper: Specified pH ±2.5 units Meter: Specified pH ± 1.0 units
Specific gravity	Hydrometer or scale/volume for homogeneous media	Confirm specific gravity: solids ± 1.00 units liquids ± 0.25 units
Water reactivity (not required for aqueous waste)	Addition of water	For nonreactive: no evolution of gases or significant increase in temperature
Solids screen for free liquids	Visual inspection	No free liquids observed in wastes that are stated not to contain free liquids
Organic vapors	Organic vapor analyzer or combustibility meter	≥200 ppm for volatile or semivolatile organic-bearing wastes; <200 ppm for aqueous wastes
Oxidizer	Potassium iodide starch paper in hydrochloric acid or redox probe/meter	Paper: changes in color Meter: >0.5 volts of the reducer scale
Reducer	Iodine/starch water redox or probe/meter	Water: changes in color Meter: >0.5 volts on the reducer scale

ppm = parts per million.

C-2f. Additional Requirements for Ignitable, Reactive, or Incompatible Wastes [IDAPA 58.01.05.008; 40 CFR 264.13(b)(6) and 264.17]

FDP Cell and CPP-659/-1659 Storage

Container storage of wastes in the FDP cell and in CPP-659/-1659 will be limited to nonliquid, physically solid waste forms. Waste matrices will be evaluated by INEEL facility personnel for free liquids prior to acceptance, and the point of generation facility personnel responsibility is to ensure and certify that no free liquids are present.

EPA HWNs are applied to hazardous and/or mixed waste and debris, such as HEPA filters, through the process of acceptable knowledge, which involves both process knowledge and/or chemical, physical testing of the waste. F and U EPA HWNs have been applied based on knowledge of the processes. The F and U HWNs have been assigned as a result of the contained in rule. In addition, only hazardous and/or mixed waste and debris containing no free liquids will be accepted, thus, the wastes will neither be reactive nor ignitable. Since these F- or U-listed wastes chemicals are not in their pure or concentrated form, the characteristics of ignitability or reactivity would not and could not arise from these codes.

In some cases, due to high radiation fields associated with the wastes, the generator has discretionarily assigned EPA HWNs to the waste, in lieu of testing.

Individually, the D, F, and U EPA HWNs have the potential to pose an incompatible scenario, i.e., if mixed with sufficient concentration of the pure chemical, as well as, other factors, such as time, mixing configuration, and containment of the chemicals. However, the EPA HWNs have been primarily assigned based on the contained in rule. The chemical constituents associated with these EPA HWNs already have achieved chemical equilibrium and stability within the final physically solid waste form or exist in low concentrations. Any danger to (1) generate extreme heat or pressure, fire or explosion, violent reaction, (2) produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to pose a risk of fire or explosions, or (3) damage the structural integrity of the facility as a result of chemical reactions would have been eliminated by the following: (a) insufficient quantity of the chemicals in a pure, concentrated form to pose a problem, (b) lack of a liquid vehicle to provide a mechanism for a high reaction and mixing rate, (c) a containment configuration that does not permit a pressure buildup and release if event “a” and “b” were simultaneously achieved, and (d) lack of an adequate ignition or energy source to initiate the reaction.

HEPA filters by design have a poor ability to retain organic chemicals other than in trace amounts, as their primary purpose is to retain larger particles. Listed hazardous wastes do not exist on the HEPA filters in either a pure, concentrated form or in more than de minimis or trace quantities. Other debris, like HEPA filters, lacks the quantity of chemicals necessary to provide a vehicle for reaction to create a hazard to human health or the environment.

Debris Treatment Processes

HEPA filter and other debris treatment involves treatment of a physically solid waste form which has no associated free liquids. The HFLS process and other debris treatment involves treatment of HEPA filters and other debris, by leaching the hazardous waste contaminants from the filters and other debris, using water and nitric acid solutions. Highly concentrated nitric acid solutions are not employed in the leaching process. The use of these solutions in the treatment processes will not affect the chemical conditions existing in HEPA filters/other debris and are consistent with the logic stated above, in "FDP Cell and CPP-659/1659 Storage."

Holdup and Collection Tanks

Solutions and wastes from the debris treatment processes are compatible if mixed in these tanks.

RMWSF and HCRWSF Container Storage

Each waste stream proposed for storage in the units addressed in this permit is evaluated for all applicable RCRA characteristics by the WTS as part of the waste characterization process. If a waste is determined to be D001, (ignitable), the waste is managed in a manner to prevent its ignition while in storage. Either process knowledge or analysis using the methods described in Section C-2a of this WAP may be used to make the determination of whether or not a waste is ignitable.

Incompatibility determinations are based on the characterization data the WTS develops during the initial characterization activities. The storage units operate in accordance with defined procedures, which demonstrate how these data are used to prevent incompatible wastes, including reactives, from contacting one another. The tables in Appendix V of 40 CFR 264, 265 and 49 CFR 177.848 are examples of resources that may be used to determine compatibility.

The WTS evaluates for the characteristic of reactivity during the waste characterization process. If, based on the information provided by the source generating the waste, the waste is a new, unused chemical product that is either a P- or U-listed waste for which reactivity is the basis for listing, the waste is considered a reactive waste. If the waste is a mixture that contains P- or U-listed constituents for which reactivity is the basis for listing, the waste is evaluated to determine if the waste matrix will be a reactive waste. Consideration must be given to concentration, purity, and processes in which the chemicals have been previously employed, the matrix in which they may be combined, specific characteristics of the chemicals (i.e., volatility, mobility, reaction to water and/or other solvents, viscosity, density, pH, etc.), cumulative chemical effects, and the time the chemical constituents have been in contact with each other.

In the event that an evaluation based on the knowledge of the waste stream is not adequate to make the determination of whether or not the waste is reactive, analytical data are evaluated. This evaluation determines if the constituent of concern is present in a concentration that will cause the waste stream to be reactive. The analytical data reviewed could be new data obtained from sampling and analyzing the waste stream, or may be based on process data for the source generating the waste.

If, during the waste characterization process, the WTS identifies a constituent in the waste that is not familiar, and that is regulated as a listed waste, the WTS will consult reference material to determine if the constituent may be reactive. References used may include published text on chemical properties and/or manufacturers' specifications. A chemist or other qualified professional who can be used as a consultant in making the appropriate determination may also be used as a reference. Regardless of whether or not a consultant is used, the WTS performing the waste characterization has the responsibility to ensure waste characterization is correct.

C-3. Waste Analysis Requirements Pertaining to Land Disposal Restrictions [IDAPA 58.01.05.011; 40 CFR 268]

The Hazardous and Solid Waste Amendments to RCRA permit the land disposal of certain types of wastes, only if LDR treatment standards are met. Information provided in this section describes the additional requirements for generating facilities and treatment unit personnel to characterize, document, and determine LDR applicability.

C-3a. Waste Characterization

The waste generators are responsible for providing accurate waste characterization information for wastes to be managed and generated at the units addressed in this permit. This information includes, where applicable, characteristic and listed determinations in addition to identification of wastewaters and nonwastewaters treatability groups [i.e., total organic carbon, total suspended solids (IDAPA 58.01.05.001; 40 CFR 268.48)] underlying hazardous constituents (IDAPA 58.01.05.001; 40 CFR 268.40), treatment standards applicable to waste, liquid/nonliquid determinations, and LDR subcategories.

LDRs are assigned to the waste at the point of generation, based on EPA hazardous waste numbers assigned to individual waste streams received and generated. Waste streams are assigned "F", "P", and "U" listed EPA HWNs, in addition to characteristic hazardous waste numbers (D001 through D043). Such hazardous waste is considered to be an LDR restricted waste. Once assigned by the generators at their respective facilities, LDRs will carry through to treatment residuals.

Waste generated from TSDF activities, e.g., maintenance and spill cleanup, will undergo a hazardous waste determination and LDR assessments, based on testing and/or process knowledge, as outlined in Tables C-1 and C-2, prior to management of the waste. If the waste is determined to be subject to the LDR requirements, generators will determine if the waste is wastewater or nonwastewater and applicable subcategories, using the parameters listed in Table C-2. In addition, total metal or total organic analyses are used to identify and determine compliance between LDR regulated hazardous waste constituents associated with the waste and the LDR treatment standards, unless otherwise specified in IDAPA 58.01.05.011 (40 CFR 268.40 and 40 CFR 268.49). Additional information on the characterization process is found in Section C-2.

C-3b. Sampling and Analytical Procedures

Refer to Sections C-2a and C-2b, and also Tables C-1 and C-2, for a discussion of sampling and analytical procedures. Test methods used to assess LDR treatment standards, except for treated debris, will be based on total analysis, unless otherwise specified in IDAPA 58.01.05.011 (40 CFR 268.40 - 268.45).

C-3c. Frequency of Analysis

Waste streams generated several times a year from highly controlled processes in which the waste composition remains consistent for the duration of the year are initially characterized and re-characterized when:

- The process generating an established waste stream changes
- The waste characteristics are highly variable from shipment to shipment
- There is reason to suspect a change in the waste, based on inconsistencies in the manifest, packaging, or labeling of the wastes, or there are inconsistencies between the waste verification results and the waste characterization data provided by the generator
- TSDF personnel reject the waste because it fails verification
- An off-Site TSDF rejects the waste due to improper characterization.

TSDF personnel can require additional waste analysis to substantiate waste characterization data.

C-3d. Additional Requirements for Treatment Facilities

C-3d(2) Analysis of Treatment Residues

Treated debris will be examined to verify that a clean debris surface has been met, per IDAPA 58.01.05.001 (40 CFR 268.45). In addition, this debris may be sampled and analyzed in accordance with the methods described below and in accordance with Sections C-2a, C-2b, and C-2c, or undergo process knowledge evaluation prior to disposal.

The HFLS treatment process addressed in this permit can generate residual fiberglass fines. The fines will be collected, characterized, and sent to either an on-Site or off-Site TSDF for storage and treatment. The liquid leachate from HFLS and other debris treatment will be collected in Tanks VES-NCD-123 or VES-NCD-129. The residues and treatment solutions will be characterized by applying the EPA HWNs associated with the wastes that were treated and, where applicable, may be

tested for characteristics of hazardous waste and for LDR information, using the approved test methods provided in Tables C-1 and C-2, or process knowledge may be used in lieu of testing. Likewise, residuals from other debris treatment processes will be handled in the same manner.

HEPA filters or other debris received, that has not previously undergone the acceptance process, will be tested for TCLP after treatment, unless process knowledge is adequate to be used in lieu of testing. If there is a change in the process generating HEPA filters or other debris that could involve changes in concentrations of constituents, the filters or other debris from that system will be recharacterized. Facility personnel will be required to verify that the process system has not changed since the treated filters from the specific process system were characterized.

Treated HEPA filters and other debris are evaluated by decontamination technicians, to determine if the treatment standards specified in IDAPA 58.01.05.011 (40 CFR 268.45) for a clean debris surface have been met and whether the debris is characteristically hazardous. A major problem with inspection involves high radiation fields associated with the debris. Although high radiation field debris can be evaluated remotely, inspection involves more operational steps and specialized equipment. Once the debris has been radiologically decontaminated and is capable of being contact-handled, more options become available for inspection. Trained facility personnel, in debris treatment evaluations, can then more closely examine the debris. The debris itself (e.g., valves, pumps, or electric motors) can be dismantled for evaluation. Piping length is adequate to allow the use of high-intensity lighting to view down through it. Piping that is small (or large) in diameter can be inspected either visually or with the use of a boroscope. Once debris is capable of being contact-handled there is little chance of an item being uninspectable. If debris cannot be contact-handled, for any reason, it may be evaluated and treated remotely using manipulators or other handling devices and inspected through sight glass or via remote imaging equipment (e.g., camera or boroscope). If debris cannot be treated to a clean debris surface, because of high radiation fields, materials of construction, complex structure, or other handling concerns, it may be treated by an appropriate technology identified in Table 1 of 40 CFR 268.45, at an approved TSDF either on-Site or off-Site. If the debris is determined not to have met the "clean debris surface" requirement, then the debris must be retreated or managed as hazardous (See Appendix C-1). Treatment residuals are characterized based on the EPA HWNs originally assigned to the treated waste prior to treatment, characteristic assessments, and applicable LDR requirements (e.g., total organic carbon, total suspended solids, underlying hazardous constituents, and LDR treatment standards).

C-3d(3) Sampling and Analytical Procedures

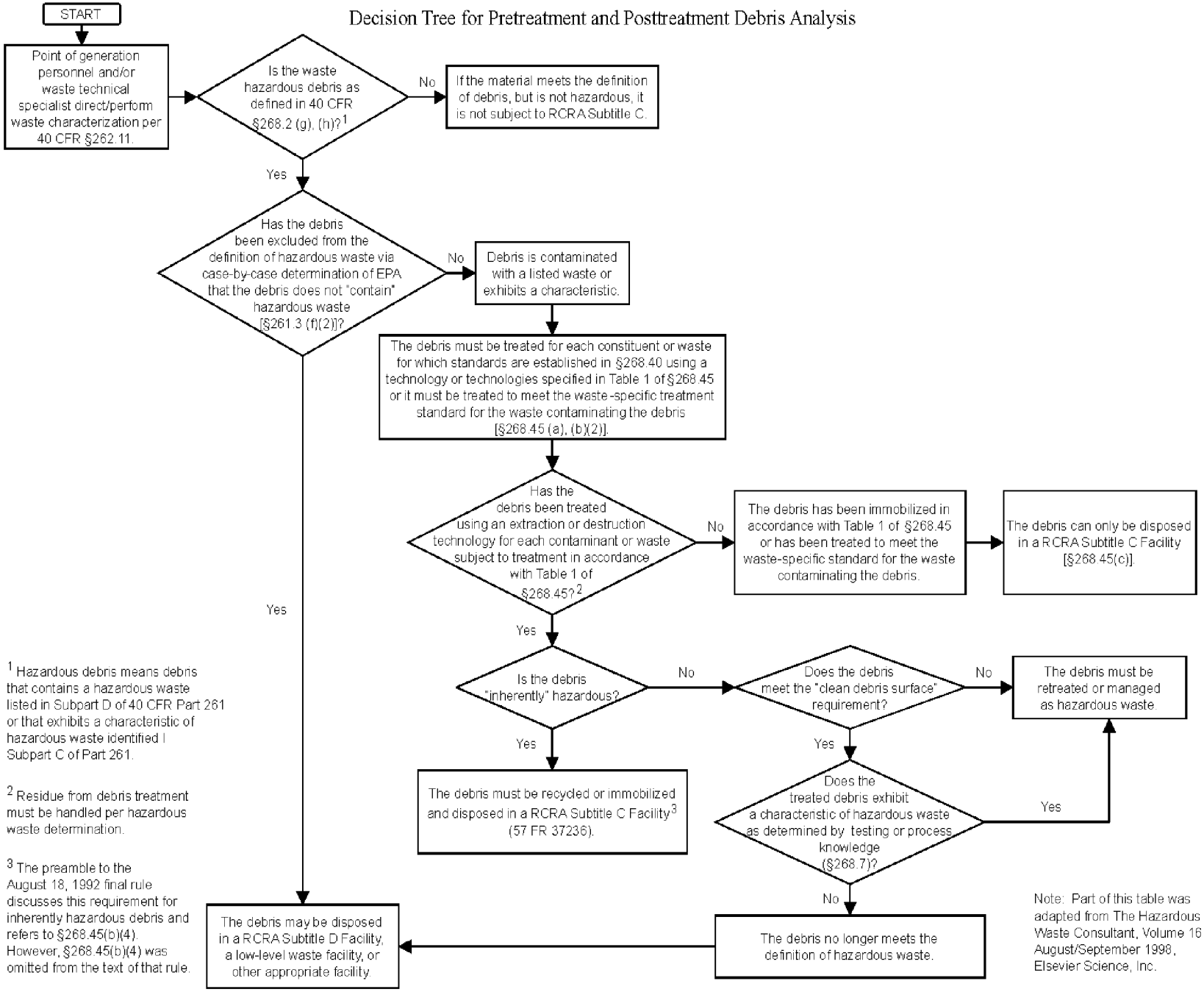
The sampling and analytical procedures that are used to characterize treated waste and residuals are addressed in Sections C-2a, C-2b, and C-2c of this permit.

C-3d(4) Frequency of Analysis

The frequency at which treated waste and associated residuals characterized is described in Section C-2d of this application.

Appendix C-1. Decision Tree for Pretreatment and Posttreatment Debris Analysis

Decision Tree for Pretreatment and Posttreatment Debris Analysis



[1] Hazardous debris means debris that contains a hazardous waste listed in Subpart D of 40 CFR Part 261 or that exhibits a characteristic of hazardous waste identified I Subpart C of Part 261.

[2] Residue from debris treatment must be handled per hazardous waste determination.

[3] The preamble to the August 18, 1992 final rule discusses this requirement for inherently hazardous debris and refers to §268.45(b)(4). However, §268.45(b)(4) was omitted from the text of that rule.

Note: Part of this table was adapted from The Hazardous Waste Consultant, Volume 16, August/September 1998, Elsevier Science, Inc.

Appendix C-2. Example of Waste Determination & Disposition Form

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INEEL WASTE DETERMINATION & DISPOSITION FORM (WDDF)

General Instructions:

WASTE STREAM NAME: _____ **MATERIAL PROFILE NUMBER:** _____

WDDF NUMBER (OPTIONAL): _____ CHARGE #: _____

WASTE STREAM CONTACTS

Contact:	Name	E-Mail	Phone	Pager	MS	Contact:	Name	E-Mail	Phone	Pager	MS
Generator:						Technical Specialist:					
Facility Rep.:						Independent Reviewer:					

SECTION I: PROCESS KNOWLEDGE EVALUATION (Completed by the generator with assistance from the Facility Representative)

1. Waste Generation Location: Facility: Building/Room: Area: If applicable: Container #: Type/size:

2. Process and Waste Description: (Attachment Included: ☐ Yes ☐ No)

3. Were any waste minimization activities a part of this process: ☐ Yes ☐ No (If Yes, provide description or reference.)

4. Generation Status: ☐ Anticipated ☐ Existing ☐ Routine operations ☐ Cleanup/Stabilization Activities ☐ One Time Only ☐ On-going ☐ Secondary

5. Other generation information:

6. Physical Description (check all that apply): Color: ☐ Solid ☐ Organic Liquid ☐ Aqueous Liquid ☐ Sludge ☐ Aerosol ☐ Gas Cylinder ☐ Multi-Layered

7. Sources used for process evaluation (e.g. MSDS, operational logs, procedures, analyses):

8. Waste Characteristics: Note: The waste characteristics may not be known at time of initial determination. If required for treatment or characterization, those parameters will be identified at a later date.

Liquids		Solids		All	
a. pH (aqueous only): ☐ < 2 ☐ ≥ 12.5 ☐ > 2 or < 12.5 Exact	Method: ☐ NA	h. Asbestos: If yes, is it friable?	☐ Yes ☐ No ☐ NA ☐ Yes ☐ No ☐ NA	n. PCBs: If Yes, provide concentrations (actual & source) in composition table. PCBs Bulk Product? (40 CFR 761.62)?	☐ Yes ☐ No ☐ NA ☐ Yes ☐ No ☐ NA
b. Flash Point: ☐ NA	Method:	i. Pyrophoric (Water Reactive)	☐ Yes ☐ No ☐ NA	o. Sulfide > 500 mg/kg	☐ Yes ☐ No ☐ NA
c. Total suspended solids <1%	☐ Yes ☐ No ☐ NA	j. Flammable Solid	☐ Yes ☐ No ☐ NA	p. Cyanide > 250 mg/kg	☐ Yes ☐ No ☐ NA
d. Is total organic carbon <1%	☐ Yes ☐ No ☐ NA			q. Oxidizer	☐ Yes ☐ No ☐ NA
e. Fuming Acid/Acid Gases	☐ Yes ☐ No ☐ NA	k. Free liquids: If Yes, quantity volume %	☐ Yes ☐ No ☐ NA	r. Treatment Residue	☐ Yes ☐ No ☐ NA
f. Pyrophoric (Air Reactive)	☐ Yes ☐ No ☐ NA	l. RCRA Debris (>60 mm)	☐ Yes ☐ No ☐ NA	s. Explosive	☐ Yes ☐ No ☐ NA
		(≥ 50% by visual inspection) or non-RCRA Rubble	☐ Yes ☐ No ☐ NA	t. Radioactive	☐ Yes ☐ No ☐ NA
g. Water Reactive	☐ Yes ☐ No ☐ NA	m. Pyrophoric (Air Reactive)	☐ Yes ☐ No ☐ NA	u. Halogens (Cl, F, Br)	☐ Yes ☐ No ☐ NA

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INEEL WASTE DETERMINATION & DISPOSITION FORM (WDDF)

WASTE STREAM NAME: _____ **MATERIAL PROFILE NUMBER:** _____

9. Waste Composition: (Must total 100%). Attachment Included: ☐ Yes ☐ No ☐ NA

Constituent	CAS No.	Analysis or PK	Range (If constituent is <1%, use mg/kg or mg/L, otherwise report in %) From	To	Units	Used as a Solvent? (Y/N)	Comments

10. Radioisotopes: Are radioisotopes present? ☐ **Yes,** If Yes, refer to attachment ☐ **No,** If No, include signed form 435.02

SECTION II: PROBABLE WASTE TYPE: (Completed by the Facility Representative and used to assign waste technical specialist and for appropriate management until final waste determination is made.)

Based on evaluation of the process and available data the waste type indicated is (check all that apply):

☐ Hazardous Only	☐ Mixed	☐ Radioactive Only	☐ Conditional Industrial	☐ Used Oil
☐ Material Exchange	☐ Lab Pack	☐ Non-conditional Industrial	☐ TSCA	☐ Other – Describe:

☐ Recyclable: ☐ Non Radioactive Lead (>99+ % Lead) ☐ Lead Batteries ☐ Silver ☐ RCRA Scrap metal ☐ Other - Describe:

Indicated Waste Codes:

CERTIFICATION

I certify that the information in Section I of this form and the applicable attachments are fully disclosed. A good faith effort has been put forward to acquire and verify the information. Willful or deliberate omissions have not been made, and all known and suspected hazards have, to the best of my knowledge, been identified. The WGS Facility Representative, based on information provided, has assigned a probable waste type in Section II.

Generator Name Typed/Printed	Signature	Date
WGS Facility Representative Name Typed/Printed	WGS Facility Representative Signature	Date

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INEEL WASTE DETERMINATION & DISPOSITION FORM (WDDF)

SECTION III WASTE DETERMINATION AND DISPOSITION (COMPLETED BY THE WGS TECHNICAL SPECIALIST)	
A. Waste Determination	
1. Is this a solid waste (per 40 CFR 261.2)? ☐ Yes ☐ No (If No, attach regulatory citation)	
2. Is this a Hazardous Waste (per 40 CFR 261.3)? ☐ Yes ☐ No	
3. Is waste excluded from regulation under 40 CFR 261.4? ☐ Yes ☐ No If Yes, Regulatory citation:	
4. Is waste subject to 40 CFR 268 regulations? ☐ Yes ☐ No If Yes, is the waste a: ☐ Waste Water or ☐ Non Wastewater. Is there a specified method of treatment? ☐ Yes ☐ No If Yes, list the specified method:	
5. Is waste listed in Subpart D of 40 CFR 261? ☐ Yes ☐ No (If Yes, provide waste codes, regulated hazardous constituent(s), and an explanation of determination.) Attachment Included: ☐ Yes ☐ No Codes:	
6. Is waste characteristic per Subpart C of 40 CFR 261? ☐ Yes ☐ No (If Yes, provide waste codes, regulatory subcategory, and an explanation of determination.) Attachment Included: ☐ Yes ☐ No Codes:	
7. If hazardous, is the waste excluded for recycling in accordance with 40 CFR 261.2(e)(1)? ☐ Yes ☐ No If Yes, regulatory Citation:	
8. Is the waste mixed or low level? ☐ Yes ☐ No (If Yes, include attachment with isotopic information.)	
9. Is waste TSCA regulated for either of the following? PCBs: ☐ Yes ☐ No Asbestos: ☐ Yes ☐ No	
B. Evaluation of Underlying Hazardous Constituents (UHCs)	
Does the waste require evaluation in accordance with 40 CFR 268.48? ☐ Yes ☐ No (If Yes, identify UHCs.) UHCs: Attachment Included: ☐ Yes ☐ No	
C. Disposition and Data Gap Evaluation: (Attachment Included: ☐ Yes ☐ No)	
1. Proposed Disposition (storage, treatment, disposal pathway):	STP ID (mixed only):
2. Will this waste be treated in a <90 storage area? ☐ Yes ☐ No (If Yes, attach plan.) (Mixed and Hazardous Only)	
3. Is the information provided adequate for complete waste determination, management, transportation, treatment, and disposal of waste? ☐ Yes ☐ No If No, identify additional information or analysis required.	
D. Verification requirements: (Attachments Included: ☐ Yes ☐ No)	
1. Will verification be performed on this waste? ☐ Yes ☐ No If Yes, describe the verification to be performed.	
At Initial Storage Location: ☐ Yes ☐ No	Immediately Prior to Shipment: ☐ Yes ☐ No
2. What is the verification frequency?	

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E. Packaging and Transportation Requirements (to be completed by P&T): Complete this section only if wastes are to be transported.		
1. Is waste a DOT Regulated Hazardous Material? ☐ Yes ☐ No If Yes:	DOT Primary Hazard:	DOT Subsidiary Hazard:
2. Recommended Packaging:		
3. Probable Basic Description (PSN, Hazard Class, DOT ID #. PG):		
4. Other information (special shipping conditions, etc.):		
5. If containers are already generated, are they packaged correctly for the DOT hazard class? ☐ Yes ☐ No If No, list container required.		

Packaging & Transportation Name Typed/Printed	Packaging & Transportation Signature	Date

Summary of Waste Determination:	☐ Hazardous (see codes listed above)	☐ Mixed Low-Level (see codes listed above)	☐ Low-Level	☐ Conditional Industrial	☐ Other (describe)

CERTIFICATIONS

I certify that the information in Section III of this form and the applicable attachments are fully disclosed and accurate. A good faith effort has been put forward to acquire and verify the information. Willful or deliberate omissions have not been made, and all known and suspected hazards have, to the best of my knowledge, been identified.

WGS Technical Specialist Name Typed/Printed	WGS Technical Specialist Signature	Date

WGS Independent Reviewer Name Typed/Printed	WGS Independent Reviewer Signature	Date

Low Level Waste Hazardous Waste Determination Review Name Typed/Printed	Low Level Waste Hazardous Waste Determination Review Signature	Date

Additional Narrative Information (As Needed):